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Uses of NFIRS

The Many Uses of the National Fire Incident Reporting System

Federal Emergency Management Agency
United States Fire Administration
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TABLE OF CONTENTS

The Many Uses of the National Fire Incident Reporting System

INTRODUCTION

The National Fire Incident Reporting System (NFIRS) is an information system initiated and supported by the U.S. Fire Administration. The U.S. Fire Administration developed NFIRS as a means of assessing the nature and scope of the fire problem in the U.S. The system first came on line in 1976, and since then it has grown in both participation and use. This report is an attempt to capture the many ways that NFIRS data are used and the many types of organizations that benefit from its availability. These organizations include:

- agencies within the fire service itself, such as local fire departments, State Fire Marshal's offices and the U.S. Fire Administration;
- other agencies of the federal government, such as the U. S. Consumer Product Safety Commission, the National Highway Traffic Safety Administration, and the National Institute of Standards and Technology; and
- private industry organizations, including national associations for home appliance product manufacturers and the hotel and motel industry, insurance companies, attorneys and many others.

Because access to NFIRS is so widespread it is impossible to report every use of the data. Instead, this report will give readers a sense of the many uses and users of the information available in NFIRS.

How NFIRS Works

The U.S. Fire Administration (USFA) and the National Fire Information Council (NFIC) jointly manage NFIRS. NFIC is a users' group comprised of volunteers who donate their time to maintain the existing system and research and implement changes to improve it. The members of NFIC come from state agencies and metropolitan fire departments responsible for fire data collection

and analysis. As federal budgets have been reduced, the role of NFIC has expanded. Due to the extraordinary commitment of the members of this council to NFIRS, as well as the ongoing support of USFA, the system maintains its high level of performance.

As critical a role as the members of NFIC play, the heart of the system is dispersed across the country, in the 14,000 fire departments that participate in NFIRS. After responding to an incident, fire department personnel fill out the appropriate NFIRS reports. These describe the nature of the call , the actions firefighters took in response to the call, and the end results. The latter include the number of any civilian or fire fighter injuries or deaths and an estimate of property loss. While specific forms filled out by a local fire department may be state-specific, they contain a core of information common to every state's reporting system. The uniformity of definitions used in coding these fields makes aggregation of national data possible.

Local fire departmen ts forward completed NFIRS forms, which are filled out either manually or via computer, to the state agency responsible for NFIRS data. The state agency electronically submits data compiled from all participating jurisdictions to the U.S. Fire Administration. Annual NFIRS data are used as the basis for the U.S. Fire Administration's publication *Fire in the United States,* which is the single most comprehensive reference on the nature and scope of the fire problem in the U.S.

History of NFIRS Participation

Because NFIRS is a voluntary system, not all states or fire departments within states participate. In 1977, one of the early years of the system, 5 states regularly reported data to the National Fire Data Center, and 19 others had data systems in some stage of development. Since then participation has increased to include jurisdictions in 41 states, and over 14,000 of the more than 30,000 U.S. fire departments report to NFIRS. It is estimated that 44% of all fires that fire

departments respond to are captured in NFIRS, making NFIRS an extremely large sample of all fires that occur each year.

Because states have the flexibility to adapt their state rep orting systems to their needs, and since reporting by localities is voluntary, the design of a state's data collection form can vary from state to state. However, NFIRS was designed so that data from state systems can be converted to a single format that is used at the national level to aggregate and store NFIRS data.

Table 1 lists the states that are currently participating in NFIRS. Other states, such as North Carolina and Delaware, have fire information reporting systems but do not participate in the national NFIRS. One goal of this report is to document the level of participation and the usefulness of NFIRS data. This can be used to encourage continued participation in the system and to encourage additional states and fire departments to join.

Table 1. 1994 List of States Participation in NFIRS

Alabama	Kentucky	Oregon
Alaska	Louisiana	Rhode Island
Arkansas	Maryland	South Carolina
Arizona	Massachusetts	South Dakota
California	Michigan	Tennessee
Colorado	Minnesota	Texas
Connecticut	Montana	Utah
District of Columbia	Nebraska	Vermont
Florida	New Hampshire	Virginia
Georgia	New Jersey	Washington
Idaho	New Mexico	West Virginia
Illinois	New York	Wisconsin
Iowa	Ohio	Wyoming
Kansas	Oklahoma	

State Uses of NFIRS

Perhaps the most fundamental use of NFIRS is in understanding the nature of the fire problem, whether conceived at the national, state, or local level. One indicator of the usefulness of the system is its utilization by State Fire

Marshal's offices in preparing their annual reports. In an informal review of 31 states' annual reports, all but one included data available from state NFIRS systems. Many states, such as California, Maryland, New York and Texas, use their local NFIRS as the basis for the majority of the content of their annual reports.

One example of the myriad ways NFIRS data can be used for analysis at the state and local levels comes from the Commonwealth of Massachusetts. Massachusetts used its state NFIRS system, MFIRS, to conduct an analysis of motor vehicle fires. First, the Division of Fire Prevention of the Department of Public Safety used MFIRS to identify vehicle arson as a major problem in the Commonwealth. Their report states that between 1986, when the problem was first identified, and 1989, vehicle fires outnumbered structure fires. In 1987, a new law went into effect that required vehicle owners to complete a report at fire headquarters if they experienced a vehicle arson and wanted to pursue an insurance claim. In 1990 the Division of Fire Prevention issued a follow-up report based on MFIRS data to demonstrate the effectiveness of that law. It reported that motor vehicle fires dropped by 35 percent between 1987 and 1990 and that vehicle arsons dropped by an even more dramatic 52 percent. [1]

Local Uses of NFIRS

Because there are thousands of local fire departments using NFIRS, it is impossible to document all the ways they are using the data. For departments in states that rely heavily on NFIRS for reporting fire statistics, an important advantage is that local fire departments can compare their own productivity and effectiveness with the state average. They can also seek out statistics on fire departments in communities similar to their own and conduct comparisons.

[1] The Commonwealth of Massachusetts, Department of Public Safety, Division of Fire Prevention. "Motor Vehicle Fires in Massachusetts, 1990." Publication number 16965-17-200-10-1-91 P.S. Report dated September 25, 1991.

The fire department of San Antonio, Texas relies heavily on its local NFIRS. The system is automated at the level of the fire house and runs almost in real-time because firefighters file reports on calls within twenty minutes of returning to the station. The location of calls is recorded in the system using X-Y coordinates that refer to the location the firefighters responded to, which is not always the same as the address recorded when the original call for service was placed. The rich resources of this system allow the fire department to conduct many sophisticated analyses including:

- Identification of trends in the number of calls to the fire department, the types of calls made, and the origin of calls. This information is used, for example, to plan station relocations.

- Justification of fire department budgets to the city council. The system will allow the fire department to count, for example, the number of brush fires it to which it has responded, identify whether the trend is upward or downward, and then make an assessment as to whether the department has enough brush fire trucks in service.

There is little doubt that NFIRS has stimulated thousands of communities to use hard data for their fire protection management decision making and to improve local data systems generally. That NFIRS has made these types of analyses and improvements possible, whether undertaken at the state or local level, is among NFIRS's most important achievements.

Each year USFA receives hundreds of requests for information from NFIRS. Table 2 presents a list of the types of organizations that submitted data requests in 1996.

Table 2. 1996 USFA Organizations Submitting Data Requests

Local Fire Departments	Fire Organizations
Private Industry	Media
Private Citizens	Insurance Companies
U.S. Congress	Product Manufacturers
Federal Government Agencies	Local Governments
State Governments	Law Offices
Universities	

Local fire departments are among the organizations that submit the most data requests each year. This is an indication that NFIRS is meeting one of its most important objectives, which is to assist fire service providers at the local level.

U.S. Fire Administration Uses of NFIRS

The Fire Administration uses NFIRS for many purposes. Among these are:

- prioritizing the many fire issues extant in the U.S. and setting agency goals and objectives;
- identifying aspects of the fire problem that require continued monitoring, additional research, or administrative action;
- quantifying the costs of fire, both in terms of lives and property and educating the public and political leaders about the need for improved fire safety;
- preparing Congressional testimony and justifying budget requests to support the work of USFA;
- facilitating agency management reviews based on performance based budgeting; and
- providing a means of measuring the impact of agency programs and activities.

In addition to the uses of NFIRS described above, the availability and potential applications of NFIRS data are included in course work provided at the National Fire Academy. Examples of these courses are Executive Planning, Executive Development, Community Master Planning, Strategic Analysis of Community Risk Reduction, and Management of Fire Prevention Programs and Code Management: A Systems Approach.

Several of USFA's uses of NFIRS are described in greater detail b elow.

NFIRS data are used by USFA to identify emerging fire problems and to rank the causes and scenarios of fire. This information is used to target studies of the leading fire problems in more detail than is possible with other data sources. For example, when it was discovered that the Southeastern region of the U.S. had

the highest fire death rate of any region, USFA chartered a study with the National Institute of Standards and Technology's Center for Fire Research to identify the causes in greater detail. That study confirmed what had been learned through NFIRS -- that heating, especially alternative heating sources such as portable space heaters, was the surprising leading cause of fire deaths in the Southeast. This study is one example of how NFIRS is performing in ways consistent with the original vision for the system. The data allow USFA to identify a fire problem at the national level and then target resources to undertake more detailed analyses.

In recent years NFIRS data have been used to identify or analyze issues associated with firefighter injuries and deaths and resulted in several reports. These include:

- *Fire and Emergency Medical Services Ergonomics* (March 1996)
- *Minimum Standards on Structural Fire Fighting Protective Clothing and Equipment* (September 1993)
- *Protective Clothing and Equipment Needs of Emergency Responders for Urban Search and Rescue Missions* (September, 1993)
- *Firefighter Autopsy Protocol* (May, 1995)

NFIRS data are currently being used to identify populations at high risk of experiencing fires so that educational efforts can specifically target those groups.

USFA also uses NFIRS data to choose targets for its national fire prevention campaigns. For its first major national campaign, that office chose smoke detector usage and maintenance as its focus. This was in response to NFIRS data showing that three-quarters of residential fires occurred where there was no smoke detector or the detector was not working. Later campaigns targeted rural heating and urban arson problems, problems that NFIRS data revealed accounted for a high proportion of fires and fire losses in rural and urban areas, respectively.

In December 1996 the National Arson Prevention Ini tiative, a project headed by USFA's parent agency the Federal Emergency Management Agency, submitted a six-month report to the President. One of the initiatives under this project was to develop a community action program for arson prevention that localities can rely on in crafting strategies to reduce the incidence of arson in their communities. A pilot program was developed in four communities. One of the selection criteria for inclusion in the pilot program was the degree of a community's arson problem, which was determined by analyzing NFIRS data.

USFA also uses NFIRS data to prepare Congressional testimony. The Fire Administration is often called before Congress to testify on specific pieces of legislation and on a variety of broad fire issues. NFIRS data are one of the bedrocks for crafting USFA testimony. One example of such testimony involved the Cigarette Safety Act. USFA supported the Act and served as one of three agencies guiding a technical study group that implemented the research under the Act. The position that USFA took on this issue was motivated by NFIRS data showing that careless smoking continued to be the leading cause of fire deaths, even though the overall trend in careless smoking deaths was one of decline.

Other Federal Agency Uses of NFIRS

Many federal agencies other than the U.S. Fire Administration use NFIRS data. These agencies include the U. S. Consumer Product Safety Commission (CPSC), the National Highway Traffic Safety Administration (NHTSA), the National Institute of Standards and Technology (NIST), and the Centers for Disease Control and Prevention (CDC) (see Table 3 for a more complete listing). The military services (Air Force, Army, Navy, Marines and Coast Guard), are federal agencies that participate in NFIRS. Each service collects data on fires occurring within their jurisdictions and reports selected data items to the U. S. Fire Administration. In 1996 the U.S. Air Force contracted to have its Fiscal Year 1990-1995 fire data analyzed and summarized. One purpose is to establish

baseline data the Air Force can compare to future years' data. This is of considerable interest at this time because of the number of base closings that have occurred, and the Air Force is interested in tracking whether the nature and/or scope of their fire problem changes with these closings.

Table 3. Partial List of Federal Government Agencies that Use NFIRS Data

Agency
Federal Emergency Management Agency, U.S. Fire Administration
U.S. Consumer Product Safety Commission
Military Services (Air Force, Army, Coast Guard, Marines, Navy)
U.S. Commerce Department, National Institute on Standards and Technology, Center for Fire Research
U.S. Department of Transportation, National Highway Traffic Safety Administration
U.S. Congress, House Basic Research Subcommittee
U.S. Public Health Service, Centers for Disease Control and Prevention
U.S. Department of Justice, Federal Bureau of Investigation
U.S. Department of Housing and Urban Development
U.S. Department of Treasury, Bureau of Alcohol, Tobacco, and Firearms
Library of Congress

U. S. Consumer Product Safety Commission Uses of NFIRS

The U. S. Consumer Product Safety Commission (CPSC) is among the heaviest users of NFIRS data. The data are used to conduct research on potential product fire hazards and to identify the need for product recalls or product repairs in order to limit the fire hazards associated with any product.

CPSC uses NFIRS to help identify consumer products that merit special attention because of the risk of fire associated with their use or because of the way these products react when ignited. Three of the fields from the NFIRS database are particularly useful to CPSC. These are the "equipment involved in ignition", "form of material ignited", and "form of heat of ignition" fields. Based on NFIRS data and other information sources, including its own National Electronic Injury Surveillance System and investigations, CPSC has analyzed the fire risk associated with portable space heaters, kerosene space heaters, wood

stoves, metal chimneys, upholstered furniture, cigarettes, cigarette lighters, and sleepwear, among other products.

The Flammability of Children's Sleepwear. In the late 1970s, CPSC first issued flammability standards for children's sleepwear. These regulations were in response to the knowledge that certain types of sleepwear posed a greater fire hazard to children. Using NFIRS, data CPSC determined that most of the incidents involving ignition of children's sleepwear occurred while children were awake and wearing their pajamas around the house before bed or after waking up in the morning. Most fires started because sleepwear was ignited by matches or lighters, candles, kitchen ranges, stoves, space heaters, and fireplaces. [2]

Once children's sleepwear standards were implemented, CPSC has been able to use NFIRS to monitor progress on reducing the annual number of related child fire injuries and deaths. The NFIRS data have supplemented CPSC's own investigations into the issue of fires related to children's sleepwear.

Child-Resistant Cigarette Lighters. As evident in the example above, NFIRS represents an unparalleled resource for understanding both the U.S.'s most pressing current fire problems and how these problems change over time. In the 1990s CPSC has been active in reducing the risk of fire caused by young children playing with cigarette lighters. CPSC found that many lighters posed a hazard because they were easy for children to light. In July 1993 CPSC, issued a child-resistant safety standard for cigarette lighters.

NFIRS data provided a major contribution to documenting the hazard associated with lighters, demonstrating the incidence of fires started by children playing with lighters and showing that the annual number of these fires remained high while those attributable to other fire causes had declined over time. Analyzing the incidence of fires, deaths, and injuries associated with lighters, CPSC estimated that the new child-resistant lighter standards would

[2] U. S. Consumer Product Safety Commission. Office of Compliance. Letter to Sleepwear Manufacturers dated December 9, 1996.

prevent between 80 and 105 deaths annually among children under the age of five.[3]

The National Smoke Detector Project. Recently CPSC has been active in reducing the fire risk to life and property by being a major sponsor of the National Smoke Detector Project. This project, begun in 1991, was initiated in response to continuing reports of smoke detectors that failed to operate in fires. One element of the National Smoke Detector Project was a Fire Incident Study conducted by CPSC. In this study, CPSC conducted field tests of smoke detectors that failed to sound in the course of residential fires. [4]

While the field tests included investigations of smoke detectors in fifteen cities around the country, NFIRS data were used to evaluate the representativeness of the fires that were included in the final CPSC data set. By using NFIRS data and national estimates of total fire losses, CPSC was able to note consistencies and some discontinuities between their data set and national residential fire data. The general agreement between the distribution of fires in the CPSC data set and NFIRS data on variables such as smoke detector performance, confinement of smoke damage, and type of residential property was an indication to project managers that their data set was reasonably representative of residential fires nationally. [5]

In addition to informing its own safety research efforts, CPSC uses NFIRS data to respond to many inquiries regarding consumer products from the public, CPSC staff, and Congress.

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[3] U. S. Consumer Product Safety Commission, Office of Information and Public Affairs. "CPSC and Industry: Saving Lives Cost-Effectively Through Cooperation, Child-Resistant Cigarette Lighters", available on CPSC's Internet site at http://www.cpsc.gov/cpscpub/pubs/success/lighters.html, revised on May 5, 1996.

[4] *Fire Incident Study; National Smoke Detector Project*. U. S. Consumer Product Safety Commission. Report dated January 1995, pp. 3-4.

[5] U. S. Consumer Product Safety Commission, 1995, pp. 4-5 and p. 9.

The Center for Fire Research

The Center for Fire Research, located within the National Institute of Standards and Technology, is another federal agency that uses NFIRS data on a regular basis. NFIRS data have been used to develop fire models and to conduct analyses of fire risk. The Center was one of the first organizations to rank order fire scenarios on a national scale to better define the U.S. fire problem.

The National Highway Traffic Safety Administration

The National Highway Traffic Safety Administration (NHTSA) is another federal agency with applications for NFIRS data. NHTSA investigates possible safety problems with vehicles, including the incidence of fires. During the course of an investigation, NHTSA looks for trends in data, sometimes from multiple sources, regarding a particular type of vehicle. NFIRS provides a way of investigating the frequency of fires associated with certain models of vehicles.

Private Industry Uses of NFIRS

Private organizations have benefited from the information available in NFIRS as well as public organizations. Examples of private organizations that have used NFIRS data in recent years include the Association of Home Appliance Manufacturers, Mississippi Valley Gas Company, insurance companies, the Tobacco Institute, and BHP Research.

In 1996 NFIRS data were used to assist with the selection of potential pilot sites of a study conducted by the **Association of Home Appliance Manufacturers (AHAM)** on residential cooking fires. The AHAM study used data collected from ten cities, and NFIRS data were used to compare those cities to national data. Because the AHAM study specifically targeted cooking fires, investigators were able to collect information to supplement the data available through NFIRS. The supplemental data included such items as the proximity of the person to the fire; additional factors contributing to the fire; and the age, ethnicity, language spoken, and race of the person responsible for the fire.

Over the years **insurance companies** have used NFIRS data in a variety of ways. While use by this segment of the private market has been less than was anticipated when NFIRS was developed, insurance companies have used NFIRS data on losses per fire and characteristics of fire losses by fixed property use. In 1996, USFA received 15 requests for data from insurance companies.

Mississippi Valley Gas Company sponsored a study of the causes of water heater fires in 1990. Using NFIRS data, analysts were able to determine that the leading causes of fires related to gas water heaters were human-related, rather than mechanical. In particular the storage of flammables, especially gasoline, too close to the water heater accounted for almost one third of all fires related to gas water heaters. When all the categories of "misuse of material ignited" were considered, this proportion rose to over half of all fires. In response to the incidence of fires caused by gas water heater ignition of flammable vapors, the CPSC is working with industry to develop modified standards. If this effort falls short, CPSC will consider rulemaking that would likely result in the redesign of gas water heaters to make them safer.

The Tobacco Institute has sponsored analyses of the trends in fire deaths and injuries related to careless smoking and the types of materials first ignited, such as upholstered furniture and bedding. The Tobacco Institute has also used NFIRS data to help shape its fire prevention program and to evaluate grant requests relative to fire prevention priorities.

Over the past several years **BHP Research**, a subsidiary of BHP Steel located in Australia, has sponsored research of fire loss statistics relating to the following fixed property types: office buildings, parking garages, and apartment buildings. BHP was interested in assessing the number of fires that occurred in these types of structures because BHP Steel supplies steel products to the construction industry. One of the issues they were studying was the need for compartmentalization to stop the spread of fires in high rise and other types of buildings. While Australia has its own fire incident reporting system (modeled

after the U.S. system), the number of cases in the system is much smaller. On an annual basis, the Australian database adds about one-tenth the number of records as NFIRS. Because NFIRS is the largest fire data set in the world, BHP was interested in the larger sample of fires it could provide. The development of international fire information systems with which to compare NFIRS data will be a rich source of research in future years.

The Courts and Law Firms

NFIRS data are frequently used in both litigating court cases and in settling cases out of court. During 1996, USFA received numerous requests for data from law firms. If NFIRS data show that a product has a pattern of causing fires, this information can be used by plaintiffs to build a case against a manufacturer. Particularly helpful is that many years worth of data are available in NFIRS, so patterns of a product's involvement in fires over several years can be studied. In many cases, manufacturers will settle out of court to avoid having data on scores of different fires related to their product demonstrated in court. An attendant benefit is that these manufacturers may be convinced to revisit the safety of these products. In these ways, litigation can lead to safer products and better warning information on products.

In cases where NFIRS data do not reveal a pattern of fires related to a product, manufacturers can use the data to show that, relative to other possible fire causes, the likelihood of their product starting a fire was very low. In this way, NFIRS data can help protect the reputation of firms selling products that have not been involved in significant numbers of fires.

In certain industries, such as the appliance industry, many manufacturers use NFIRS data proactively, monitoring the involvement of their products in fires. This use of NFIRS is especially encouraging, because potential fires may be averted if problems with products are identified early and if products are recalled, redesigned, or both.

Nonprofit Fire-Related Organizations

A number of nonprofit fire- related organizations rely on statistics that are generated from NFIRS data. Among these groups are **the International Association of Fire Chiefs, the International Association of Fire Fighters,** and **the International Association of Black Professional Fire Fighters.** One particular concern to these groups is fire fighter casualties. If a fire fighter is killed or injured in the line of duty, a separate NFIRS form collects the specific information describing the incident. NFIRS data can then be used to generalize about the types of fires that present the greatest risk to firefighters and the types of injuries firefighters most often sustain. NFIRS data can also be used to investigate whether particular pieces of gear are associated with fire fighter injuries.

In 1993 the **National Association of State Fire Marshals (NASFM)** sponsored a study to investigate the effect of the State of California's fabric flammability standards for upholstered furniture on fire injuries and deaths. The California Fire Incident Reporting System (CFIRS) and NFIRS data on fire deaths and injuries were used to assess the impact that the California standards had over a ten year period. The results suggested that the standards were highly effective in reducing fire deaths and injuries associated with the ignition of upholstery, and these findings were used by NASFM to support their petition to the U. S. Consumer Product Safety Commission for national upholstery flammability standards.

The **National Fire Protection Association (NFPA)** is a nonprofit organization that makes wide use of NFIRS data. The data are used in conjunction with NFPA national estimates of the total U.S. fire problem to perform analyses for a variety of organizations, including fire departments, insurance companies, product manufacturers, educators, and research organizations.

NFPA also uses NFIRS data to conduct its own research studies, to inform its public education materials and marketing strategies, and to respond to data requests from various NFPA technical committees. NFIRS data are often used as the basis for articles that appear in NFPA's publication *Fire Journal*.

The Media

The media represent a uniquely powerful way to get fire and fire safety information to the public. Often reporters and researchers from newspapers, magazines, and television call USFA or other organizations that provide fire data to get information on a particular fire problem as background for a story. When possible, USFA analysts encourage reporters to broaden their stories to show how specific fire incidents relate to overall national or regional fire problems.

Within the past few years, NFIRS data have appeared in the following national publications and broadcast media:

USA Today
The Wall Street Journal
The New York Times
NBC-TV
Redbook
Ladies Home Journal
Fire Chief Magazine
World Book Encyclopedia

Recently the process of sharing USFA data with local media outlets has been formalized in an effort called the "Quick Response Unit" (QRU). USFA contracts with a public relations firm to follow news reports from all over the country. When a fatal or otherwise serious fire incident occurs in a community, the QRU faxes fire information based on NFIRS and other data sources to the local newspaper, which is encouraged to incorporate this information and relevant fire safety tips into its coverage of the event. Telephone follow-ups of these contacts are conducted on a daily basis. Each month, the QRU helps place articles in dozens of newspapers. For example in November, 1996 the QRU reported that fifty-four articles containing USFA data, the majority of it based on NFIRS data, were placed in newspapers across the country. Since the QRU was established in 1995, articles containing USFA data have reached over five million

readers. An example of one of these articles appears at the end of this report in Attachment A.

Academic and Research Institutions

NFIRS is a unique and invaluable resource for research in fire protection, and researchers in academic settings are among those using the data. In 1996, USFA received data requests from researchers affiliated with fifteen colleges and universities, as well as ad hoc requests from individual students. This type of research represents another way of getting NFIRS data out into communities and using it to identify fire problems unique to those communities.

There are several higher education institutions that have research centers specifically devoted to the study of fire issues. Among these are Worcester Polytechnic Institute, in Worcester, Massachusetts, the Fire Protection Engineering program at the University of Maryland, and the Texas A&M Fire Programs.

During 1996, at least one doctoral thesis was written that incorporated NFIRS data. Charles Jennings, a graduate student at Cornell University, wrote "Urban Residential Fires: An Empirical Analysis of Building Stock and Socioeconomic Characteristics for Memphis, Tennessee." This work represents the first major piece of research in recent years to analyze the interrelationships between building stock characteristics, socioeconomic characteristics of a population, and variations in the incidence of fire. Jennings combined NFIRS data with local tax assessor data and data from the Census of Population and Housing to investigate these relationships.

Public Fire Educators

Fire service public educators use the "big numbers" on specific fire problems to initiate local fire safety campaigns, such as how to prevent cooking fires or kerosene heater fires. The nature of an area's fire problem can vary significantly depending on a number of known factors, such as whether the area

is urban, suburban, or rural, the relative wealth of the community, the age and upkeep of dwelling units, and the proportion of dwelling units with central heating. NFIRS data help identify the types of fires that are most prevalent in an area and alert fire service members when new types of problems arise. Members of the fire service can pass on this information to the media and to the public to make them aware of potential fire problems.

Another use of NFIRS data is to justify funding of programs for dealing with community fire problems as they are identified. One community may have a need for a counseling program for juvenile fire setters, while another may need to target its resources to a public education campaign on the importance of installing and properly maintaining smoke detectors.

The Future of NFIRS

NFIRS, like any information system, constantly strives to improve the quantity and quality of the data it collects. In recent years, USFA in cooperation with the National Fire Information Council has been working on a new version of NFIRS. The new version is expected to make several improvements in the data collection process. First, the new NFIRS will benefit the public by providing much more detailed information about fires. This information can be used by local officials to better target problems they identify through their data.

Another way to improve NFIRS is to make it easier to use. Recognizing that firefighters are busy and have many responsibilities and duties, the newest version of NFIRS will facilitate the data collection process by making NFIRS forms less cumbersome to fill out. One way this is achieved is by reducing the number of coding categories for certain fields, such as fixed property use. Simplifying the data collection task should increase the proportion of fields filled out on each NFIRS form and should improve the quality of the data collected.

At the management level within the fire service, USFA has made two important changes to make NFIRS a better management tool, as well as a data

collection system. First, new modules have been incorporated into NFIRS to track the number and types of personnel and apparatus responding to calls. This data will be useful in justifying fire department budgets and making resource allocation and staffing decisions. Second, NFIRS will collect information on all incident types, not just fires. This will allow fire departments to track all of the calls they respond to within NFIRS, eliminating the need for more than one data management system.

Changes in the dissemination of NFIRS data will also make the system more relevant and responsive to the needs of local firefighters and fire departments. The National Fire Data Center (NFDC) site on the Internet will allow departments to electronically access their own NFIRS data, as well as a wide range of other information. It is hoped that providing this type of access to NFIRS data will increase the level of participation and commitment to NFIRS among local departments.

In addition to the technical changes pending in NFIRS, other changes in the system are desirable as well. For the future, greater attention and resources need to be devoted to recognizing the contribution made by firefighters who fill out NFIRS forms and cultivating their ongoing support. Recognizing this sometimes thankless duty as an activity appreciated by fire service leaders will impart "value" to the NFIRS data collection process and will translate into higher quality data. A variety of different strategies could be used to make firefighters aware of the importance of NFIRS, and local circumstances need to be considered when selecting among them. The Internet may provide a particularly useful medium for many communities. It would allow direct feedback from firefighters on the system's merits and shortcomings and a means of sharing NFIRS information with firefighters. This type of two-way communication may help identify other ways that NFIRS data can be made more relevant to firefighters at the station house level.

Another important aspect of the grassroots relationship between firefighters and NFIRS is training. If firefighter training programs are not already teaching recruits about the importance of NFIRS and how to work with the system, they need to be. Because the quality of information generated by NFIRS is only as good as the data entered at the fire house level, specific attention needs to be paid to teaching firefighters about NFIRS forms generally and the data items listed on the forms specifically. In the future, it is possible that training, benefits, and grants provided by USFA and the National Fire Academy will be more closely tied to NFIRS participation as an extra incentive for fire departments to participate.

Conclusion

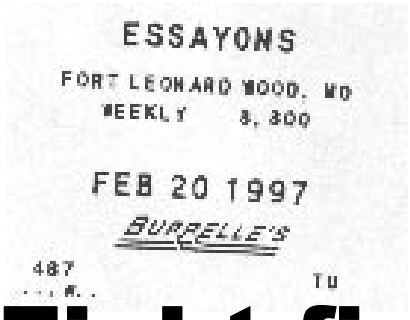
As is evident in the wide variety of uses of NFIRS data cited in this report, NFIRS provides fire service professionals and many others with vital information on the nature and scope of the fire problem in the U.S. In the private sector, NFIRS data are used by manufacturers concerned about the safety of their products. Ongoing monitoring allows companies to identify problems with consumer products early. In the public sector, NFIRS data are used by government and other organizations responsible for monitoring the safety of consumer products including upholstered furniture, cigarettes, portable space heaters, kerosene heaters, chimneys, cigarette lighters, and smoke detectors. NFIRS data are used for setting budgets for fire service agencies, allocating priorities among fire protection issues, and evaluating the effectiveness of programs and initiatives. It has also helped identify emerging trends in fire protection issues faster than ever before by aggregating millions of records of fire data and allowing the comparison of data from one year to another.

As with any information system, NFIRS cannot be every thing to every person or organization. The data will not provide an answer to every question. Instead, NFIRS capably identifies areas that require additional research, whether

through detailed, in-depth investigation or other relevant research strategies. Regardless, over the past twenty years NFIRS has become an increasingly valuable information resource, and it is an important part of our national fire protection system. As such, it is vitally important for everyone involved with the system, at every level, to take his or her job seriously. Millions of dollars are targeted at problems identified through NFIRS, so the relevance of the system must be communicated to all those involved with it, especially firefighters at the local level. With this must go a message of gratitude from NFIRS users to firefighters, so that firefighters realize that their considerable NFIRS efforts are appreciated.

There is a long way to go toward making even better use of NFIRS. But we have a national fire data system that works admirably well, even given budget cutbacks and reductions in personnel at the national level and the normal challenges of maintaining an enormous information system. Everyone associated with NFIRS at the local, state, and national levels should feel proud of the important contribution they have made. NFIRS will continue to help guide fire protection in the U.S. thanks to their efforts.

ATTACHMENT A



Fight fire with facts

Recently, your community was struck by fire and someone died. The U.S. Fire Administration advises that 80 percent of all fire deaths and injuries are preventable.

More than 4,500 Americans die each year in fires and more than 30,000 were injured. Many of them might be alive today had they had the information they needed to survive when disaster struck.

Did you know that over seventy percent of all fire deaths occur in the home. And that most of those fires can easily be prevented. Deaths due to not being able to escape a fire are particularly avoidable. Following these simple tips can boost survival rates dramatically. For example, having a working smoke detector more than doubles one's chances of surviving a fire.

The following fire tips are offered by the fire administration.

❑ **Escape planning**

1. Make sure everyone in the family knows two routes to escape from bedrooms.
2. Buy a collapsible ladder for escape from upper story windows.
3. Keep the fire department's number by the phone.
4. Have a flashlight by your bed to help you see, and a whistle to alert your family.
5. Practice feeling your way out of the house with your eyes closed.
6. Never open doors that are hot to the touch.
7. Teach your family to stop, drop to the ground and roll if their clothes catch fire.
8. Designate a meeting place outside and take attendance.
9. Remember to escape first then call the fire department.
10. Install a smoke detector on every level of your home. Check the batteries every month and change them at least once a year.

❑ **Smoke detectors**

1. Place a smoke detector on each level of your home and in all outside bedrooms.
2. Check smoke detectors monthly by pushing the test button. If you can't reach the button easily, use a broom handle.
3. Change the batteries in your detector twice a year. perhaps when you change your clocks for Daylight Savings Time.
4. Teach children what the smoke detector sounds like and what to do-leave the building immediately by crawling under the smoke-when the hear it sound.
5. If cooking smoke sets off the detector, do not disable it. Turn on the range fan, open a window or wave a towel near the detector.
6. Do not remove the batteries to put in other appliances such as personal stereos or games.
7. Smoke detectors wear out over time. Replace yours if it is 10 years old or more.
8. Consider buying a lithium-battery powered smoke detector which will operate for 10 years and is sealed so it can't be tampered with or opened.

For more information on how to prevent fire deaths please contact your local fire chief or the U.S. Fire Administration at (800)238-3358. Tips are available on alternative heaters, appliance safety, arson, careless smoking, children and fire, cooking fires, escape planning, seniors and fire, smoke detectors, and winter fires.

(From a United States Fire Administration news release)